

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently amended) A method for processing an image, the method comprising:
  - determining a first tone value for a location within the image based upon attributes of pixels within a first automatically determined neighborhood surrounding the location, the first tone value specifying a local weight for a first tone adjustment in the image;
  - determining a second tone value for the location based upon attributes of pixels within a second automatically determined neighborhood surrounding the location, the second tone value specifying a local weight for a second tone adjustment in the image;
  - and
  - adjusting the image at the location using the first and second tone adjustments according to the local weights specified by the first and second tone values, respectively;
  - identifying one or more neighborhood size parameters, one or more tone function shape parameters, and one or more tone adjustment strength parameters; and
  - for each location of multiple locations within the image, performing tone selective adjustment, where performing tone selective adjustment comprises:
    - determining a shadow neighborhood and a highlight neighborhood, each neighborhood comprising an area of the image surrounding the location that is based on at least one of the one or more neighborhood size parameters;
    - determining a shadow neighborhood intensity for the shadow neighborhood, the shadow neighborhood intensity being a measure of values of a local attribute specified by pixels within the shadow neighborhood;
    - determining a highlight neighborhood intensity for the highlight

neighborhood, the highlight neighborhood intensity being a measure of values of a local attribute specified by pixels within the highlight neighborhood;

determining a shadow tone value representing a characterization of a shadow tone of the neighborhood, where the shadow tone value is based on the shadow neighborhood intensity and a shadow tone function, where the shadow tone function is based on at least one of the one or more tone function shape parameters;

determining a highlight tone value representing a characterization of a highlight tone of the neighborhood, where the highlight tone value is based on the highlight neighborhood intensity and a highlight tone function, where the highlight tone function is based on at least one of the one or more tone function shape parameters;

determining a shadow local weight for a shadow tone adjustment based on the shadow tone value and at least one of the one or more tone strength adjustment parameters;

determining a highlight local weight for a highlight tone adjustment based on the highlight tone value and at least one of the one or more tone strength adjustment parameters;

adjusting the image at the location using the shadow local weight for shadow tone adjustment and the highlight local weight for highlight tone adjustment.

2. (Cancelled)
3. (Currently amended) The method of claim [[2]]1, wherein:  
for each pixel in ~~the corresponding each~~ neighborhood, the value of the local attribute depends on luminosity of the pixel.
4. (Currently amended) The method of claim [[2]]1, wherein:  
for each pixel in ~~the corresponding each~~ neighborhood, the value of the local attribute depends on a maximum color value of the pixel.

5. (Currently amended) The method of claim [[2]]1, wherein:

for each pixel in ~~the corresponding each~~ neighborhood, the value of the local attribute is a weighted average of a luminosity and a maximum color value of the pixel.

6. (Currently amended) The method of claim [[2]]1, wherein:

~~the neighborhood intensity is determined by~~ determining each neighborhood intensity comprises averaging the values of the local attribute for pixels within the corresponding neighborhood.

7. (Currently amended) The method of claim 6, wherein:

averaging the values of the local attribute for pixels within ~~the corresponding each~~ neighborhood includes averaging the values of the local attribute according to gaussian weights that are assigned to each pixel in the neighborhood based upon a distance between the pixel and the location.

8. (Currently amended) The method of claim 6, wherein:

averaging the values of the local attribute for pixels within ~~the corresponding each~~ neighborhood includes averaging the values of the local attribute according to weights that are assigned to each pixel in the neighborhood based upon a difference between the local attribute at the pixel and the location.

9. (Currently amended) The method of claim [[2]]1, further comprising:

receiving user input selecting a range of ~~the neighborhood intensity values~~ for which the ~~first or second~~ shadow or highlight tone value is substantially different from a reference value.

10. (Currently amended) The method of claim [[2]]1, wherein ~~the first or second tone value is specified by a first or second tone function of the neighborhood intensity, respectively,~~ the method further comprising:

—— receiving user input specifying a functional shape for the first or second tone

~~function.~~

the tone function is a generic function or a general Gaussian function.

11. (Currently amended) The method of claim 1, wherein:

~~the first shadow~~ neighborhood and the ~~second highlight~~ neighborhood are substantially identical.

12. (Currently amended) The method of claim 1, further comprising:

for each location of one or more of the multiple locations, performing the following operations:

\_\_\_\_\_ identifying a graphics object within the image, the location lying inside the graphics object; and

\_\_\_\_\_ restricting the ~~first and second shadow and highlight~~ neighborhoods for the location inside the graphics object.

13. (Original) The method of claim 12, wherein:

identifying the graphics object includes identifying lines or edges in the image.

14. (Original) The method of claim 1, further comprising:

determining one or more additional tone values for the location, each of the additional tone values specifying a local weight for a corresponding tone adjustment in the image; and

wherein adjusting the image at the location includes using each of the additional tone adjustments according to the corresponding tone value.

15. (Currently amended) The method of claim 14, wherein:

at least one of the additional tone values is determined based on the ~~first and second shadow and highlight~~ tone values.

16. (Cancelled)

17. (Cancelled)

18. (Currently amended) The method of claim 1, wherein the ~~first shadow~~ and ~~second highlight~~ tone adjustments are related to each other by a negative symmetry.

19. (Currently amended) A system for image processing, the system comprising:

~~a local adjustment tool to adjust an image including a plurality of pixels, the local adjustment tool including two or more tone components, each of the tone components specifying a corresponding tone adjustment and being configured to determine a corresponding tone value for a location within the image based upon attributes of pixels within an automatically determined neighborhood surrounding the location, each tone value specifying a local weight for the corresponding tone adjustment, wherein the local adjustment tool is configured to adjust the image at the location using the corresponding tone adjustment of each of the tone components according to the local weight specified by the corresponding tone value.~~

a local adjustment tool to adjust an image including a plurality of pixels, the local adjustment tool including a shadow tone component and a highlight tone component, wherein:

each of the shadow and highlight tone components is operable to determine a tone value and a corresponding local weight for adjustment for a location in the image by performing operations comprising:

determining a neighborhood comprising an area of the image surrounding the location that is based on at least one of one or more neighborhood size parameters;

determining a neighborhood intensity, the neighborhood intensity being a measure of values of a local attribute specified by pixels within the neighborhood;

determining a tone value for the location, the tone value representing a characterization of a tone of the neighborhood, where the tone value is

based on the neighborhood intensity and a tone function, where the tone function is based on at least one of one or more tone function shape parameters; and

determining a local weight for a tone adjustment based on the tone value and at least one of one or more tone strength adjustment parameters;

the local adjustment tool is operable to adjust the image at a location using the corresponding local weights determined by each of the shadow and highlight tone components according to the local weight specified by the corresponding tone value.

20. (Original) The system of claim 19, further comprising:  
an image capturing device to generate the image.
21. (Original) The system of claim 20, wherein the image capturing device includes a digital camera or a scanner.
22. (Original) The system of claim 19, further comprising:  
a display device to display the image.
23. (Original) The system of claim 22, wherein the display device is implemented in a portable device.
24. (Original) The system of claim 19, wherein at least one of the tone components specifies an adjustment parameter for the corresponding tone adjustment, the system further comprising:  
a user interface to set a value for the adjustment parameter.
25. (Currently Amended) ~~A software product, embodied in a tangible computer-readable medium, for processing an image, the software product comprising instructions operable to cause one or more computer processing apparatus to perform operations~~ computer readable storage device storing a computer program of instructions which, when executed by a computer processing apparatus, cause the apparatus to perform a method for processing an image comprising:

determining a first tone value for a location within the image based upon attributes of pixels within a first automatically determined neighborhood surrounding the location, the first tone value specifying a local weight for a first tone adjustment in the image;

— determining a second tone value for the location based upon attributes of pixels within a second automatically determined neighborhood surrounding the location, the second tone value specifying a local weight for a second tone adjustment in the image;

and

— adjusting the image at the location using the first and second tone adjustments according to the local weights specified by the first and second tone values, respectively;

identifying one or more neighborhood size parameters, one or more tone function shape parameters, and one or more tone adjustment strength parameters; and

for each location of multiple locations within the image, performing tone selective adjustment, where performing tone selective adjustment comprises:

determining a shadow neighborhood and a highlight neighborhood, each neighborhood comprising an area of the image surrounding the location that is based on at least one of the one or more neighborhood size parameters;

determining a shadow neighborhood intensity for the shadow neighborhood, the shadow neighborhood intensity being a measure of values of a local attribute specified by pixels within the shadow neighborhood;

determining a highlight neighborhood intensity for the highlight neighborhood, the highlight neighborhood intensity being a measure of values of a local attribute specified by pixels within the highlight neighborhood;

determining a shadow tone value representing a characterization of a shadow tone of the neighborhood, where the shadow tone value is based on the shadow neighborhood intensity and a shadow tone function, where the shadow tone function is based on at least one of the one or more tone function shape parameters;

determining a highlight tone value representing a characterization of a

highlight tone of the neighborhood, where the highlight tone value is based on the highlight neighborhood intensity and a highlight tone function, where the highlight tone function is based on at least one of the one or more tone function shape parameters;  
determining a shadow local weight for a shadow tone adjustment based on the shadow tone value and at least one of the one or more tone strength adjustment parameters;  
determining a highlight local weight for a highlight tone adjustment based on the highlight tone value and at least one of the one or more tone strength adjustment parameters;  
adjusting the image at the location using the shadow local weight for shadow tone adjustment and the highlight local weight for highlight tone adjustment.

26. (Cancelled)

27. (Currently Amended) The ~~software product~~computer readable storage device of claim [[26]]25, wherein:

for each pixel in ~~the corresponding each~~ neighborhood, the value of the local attribute depends on luminosity of the pixel.

28. (Currently Amended) The ~~software product~~computer readable storage device of claim [[26]]25, wherein:

for each pixel in ~~the corresponding each~~ neighborhood, the value of the local attribute depends on a maximum color value of the pixel.

29. (Currently Amended) The ~~software product~~computer readable storage device of claim [[26]]25, wherein:

for each pixel in ~~the corresponding each~~ neighborhood, the value of the local attribute is a weighted average of a luminosity and a maximum color value of the pixel.

30. (Currently Amended) The ~~software product~~computer readable storage device of claim [[26]]25, wherein:



~~the neighborhood intensity is determined by~~ determining each neighborhood intensity comprises averaging the values of the local attribute for pixels within the corresponding neighborhood.

31. (Currently Amended) The ~~software product~~computer readable storage device of claim 30, wherein:

averaging the values of the local attribute for pixels within ~~the corresponding each~~ neighborhood includes averaging the values of the local attribute according to gaussian weights that are assigned to each pixel in the neighborhood based upon a distance between the pixel and the location.

32. (Currently Amended) The ~~software product~~computer readable storage device of claim 30, wherein:

averaging the values of the local attribute for pixels within ~~the corresponding each~~ neighborhood includes averaging the values of the local attribute according to weights that are assigned to each pixel in the neighborhood based upon a difference between the local attribute at the pixel and the location.

33. (Currently Amended) The ~~software product~~computer readable storage device of claim [[26]]25, further comprising instructions operable to cause one or more data processing apparatus to perform operations comprising:

receiving user input selecting a range of ~~the neighborhood intensity values~~ for which ~~the first or second shadow or highlight~~ tone value is substantially different from a reference value.

34. (Currently Amended) The ~~software product~~computer readable storage device of claim [[26]]25, wherein ~~the first or second tone value is specified by a first or second tone function of the neighborhood intensity, respectively, the software product further comprising instructions operable to cause one or more data processing apparatus to perform operations comprising:~~

receiving user input specifying a functional shape for the first or second tone function;

the tone function is a generic function or general Gaussian function.

35. (Currently Amended) The ~~software product~~computer readable storage device of claim [[26]]25, wherein:

the ~~first~~shadow neighborhood and the ~~second~~highlight neighborhood are substantially identical.

36. (Currently Amended) The ~~software product~~computer readable storage device of claim [[26]]25, ~~further comprising instructions operable to cause one or more data processing apparatus to perform operations comprising wherein the method further comprises:~~

for each location of one or more of the multiple locations, performing the following operations:

\_\_\_\_\_identifying a graphics object within the image, the location lying inside the graphics object; and

\_\_\_\_\_restricting the ~~first and second~~shadow and highlight neighborhoods for the location inside the graphics object.

37. (Currently Amended) The ~~software product~~computer readable storage device of claim 36, wherein:

identifying the graphics object includes identifying lines or edges in the image.

38. (Currently Amended) The ~~software product~~computer readable storage device of claim 25, ~~further comprising instructions operable to cause one or more data processing apparatus to perform operations comprising wherein the method further comprises:~~

determining one or more additional tone values for the location, each of the additional tone values specifying a local weight for a corresponding tone adjustment in the image; and

wherein adjusting the image at the location includes using each of the additional tone adjustments according to the corresponding tone value.

39. (Currently Amended) The ~~software product~~computer readable storage device of claim 38, wherein:

at least one of the additional tone values is determined based on the ~~first and second shadow and highlight~~ tone values.

40. (Cancelled)

41. (Cancelled)

42. (Currently Amended) The ~~software product~~computer readable storage device of claim 25, wherein the ~~first shadow and second highlight~~ tone adjustments are related to each other by a negative symmetry.

43. (Previously Presented) The system of claim 20, wherein the image capturing device includes a CCD device.

44. (Previously Presented) The system of claim 20, wherein the local adjustment tool is configured to provide feedback to the image capturing device.

45. (Previously Presented) The system of claim 44, wherein the image capturing device is configured to locally adjust sensitivity based on the feedback to generate an adjusted image.

46. (Previously Presented) The system of claim 23, wherein the portable device includes a personal digital assistant, a mobile phone, or both.

47. (Previously Presented) The system of claim 46, wherein at least a portion of the local adjustment tool is implemented in a remote server.

48. (Previously Presented) The system of claim 23, wherein the local adjustment tool is implemented in the portable device.